

Remarks

In view of the above amendments and the following remarks, reconsideration and further examination are requested.

The specification and abstract have been reviewed and revised to make a number of editorial revisions. A substitute specification and abstract have been prepared and are submitted herewith. No new matter has been added. Enclosed is a marked-up copy of the specification and abstract indicating the changes incorporated therein.

A substitute Figure 10 is enclosed herewith which separately labels the four separate sections (a)-(d). No new matter has been added.

Non-elected claims 1-7 and 9-12 have been canceled without prejudice or disclaimer to the subject matter contained therein.

Claim 8 has been amended to make a number of editorial revisions. These revisions have been made to place the claims in better U.S. form. None of these amendments have been made to narrow the scope of protection of the claims, nor to address issues related to patentability and therefore, these amendments should not be construed as limiting the scope of equivalents of the claimed features offered by the Doctrine of Equivalents.

New claims 13-21 have been added. New claims 13-21 are all either directly or indirectly dependent from claim 8.

Claim 8 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Jiang (US 6,023,666) in view of Ciardella (US 5,711,989). This rejection is respectfully traversed and submitted to be inapplicable to claim 8 for the following reasons.

Claim 8 is patentable over the combination of Jiang and Ciardella, since claim 8 recites a circuit electrode bonding apparatus having, in part, a measuring section for measuring a size of a bonding portion of a circuit electrode; a comparing section for comparing the measured size of the bonding portion with a designed size of the bonding portion; a size determination section for determining a processing size of a bonding material based on a comparison result of the comparing section; and a location determination section for determining a location of the bonding portion for mounting the processed bonding material based on the comparison result. The combination of Jiang and Ciardella fails to disclose or suggest these features of claim 8.

Jiang discloses a system 200 for monitoring die attach material adhesive weight. The system 200 includes an adhesive dispenser 70, a logic circuit 62, a SPC unit 64 and an assembly line 202. The assembly line 202 includes a conveyer belt 204 for carrying lead frames from a pre-dispense location 59 to a post-dispense location 55. Located below the pre-dispense location 59 is a pre-dispense measuring unit 206 and located below the post-dispense location 55 is a post-dispense measuring unit 208.

When a lead frame is positioned over the pre-dispense location 59, the pre-dispense measuring unit 206 is utilized to weigh the lead frame. Then the lead frame is moved via the conveyer belt 204 until the lead frame is positioned below the adhesive dispenser 70. Once the lead frame is located below the adhesive dispenser 70, the adhesive dispenser 70 administers the appropriate amount of adhesive on the lead plate. On the adhesive is administered, the conveyer belt 204 moves the lead plate to the post-dispense location 208. Once the lead plate is at the post-dispense location 208, the post-dispense measuring unit 208 measures the weight of the lead plate with the adhesive. The logic circuit 62 calculates the weight of the adhesive applied to the lead plate by subtracting the weight of the lead plate at the pre-dispense location 59 from the weight of the lead plate with the adhesive at the post-dispense location 55. Once the actual weight of the adhesive is calculated, the logic circuit 62 compares the actual weight of the adhesive with a reference weight to determine whether or not the amount of adhesive applied to the lead plate is acceptable. If the amount is not acceptable, the logic circuit 62 is capable of sounding an alarm and displaying the results on the SPC unit 64. (See column 4, line 7 - column 6, line 26 and Figures 5 and 6).

Based on the above discussion, it is apparent that Jiang discloses that the system 200 is capable of measuring the weight of the adhesive applied to the lead plate by weighing the lead plate before and after the adhesive is applied and subtracting the values. The system 200 then determines whether the weight of the adhesive is acceptable by comparing it to a reference weight. However, this is quite difference from what is recited in claim 8.

Claim 8 recites a measuring section for measuring a size of a bonding portion of a circuit electrode and a comparing section for comparing the measured size of the bonding portion with a designed size of the bonding portion. While it might be arguable that the pre-dispense measuring unit 206, which measures the weight of the lead plate, corresponds to the measuring section recited in

claim 8, which measures the size of the bonding portion of the circuit electrode, the logic circuit 62 and the SPC unit 64 clearly do not correspond to the comparing section. As discussed above, the logic circuit 62 determines the actual weight of the adhesive by subtracting the measurements from the pre-dispense measuring unit 206 and the post-dispense measuring unit 208 and compares the actual weight of the adhesive to the reference weight of the adhesive. However, the comparing section recited in claim 8 compares the measured size of the bonding portion of the circuit electrode with the designed size of the bonding portion. Therefore, in order for the logic circuit 62 and the SPC unit 64 of Jiang to correspond to the comparing section recited in claim 8, the logic circuit 62 and the SPC unit 64 would have to compare the actual weight of the lead plate with a designated weight of the lead plate. This is clearly not the case, since the logic circuit 62 and the SPC unit 64 only perform a comparison between the actual and reference weights of the adhesive. As a result, it is apparent that Jiang fails to disclose the comparing section of claim 8.

Further, since the results from the logic circuit 62 and the SPC unit 64 are clearly related to the adhesive and not the lead plate, it is apparent that Jiang necessarily fails to disclose or suggest a size determination section and a location determination section as recited in claim 8, since the size determination section and the location determination section utilize the comparison result from the comparing section, which is not disclosed in Jiang as discussed above.

In the combination, Ciardella is relied upon as disclosing a location determination section as recited in claim 8. However, it is apparent that Ciardella fails to disclose or suggest the comparing section or the size determination section discussed above. As a result, the combination of Jiang and Ciardella fails to disclose or suggest the present invention as recited in claim 8.

In addition, new claim 13 recites that the measuring section measures the size of the bonding portion of the circuit electrode at a bonding temperature at which the processed bonding material is to be bound to the bounding portion. Neither Jiang, nor Ciardella, discloses or suggest performing a measurement at a bonding temperature.


Also, claim 20 recites that the bonding material is an anisotropic conductive film and claim 21 recites that the processing section processes the anisotropic conductive film to the processing size by cutting the anisotropic conductive film. Jiang and Ciardella both appear to relate to the use of a viscous adhesive and therefore do not disclose or suggest these features of claims 20 and 21.

Because of the above mentioned distinctions, it is believed clear that claims 8 and 13-21 are allowable over the combination of Jiang and Ciardella. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 8 and 13-21. Therefore, it is submitted that claims 8 and 13-21 are clearly allowable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

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